UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 11, 2016

Mr. Joel P. Gebbie
Senior Vice President and
Chief Nuclear Officer
Indiana Michigan Power Company
Nuclear Generation Group
One Cook Place
Bridgman, MI 49106

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2 – REQUEST FOR ADDITIONAL INFORMATION REGARDING LICENSE AMENDMENT REQUEST TO RELOCATE SURVEILLANCE FREQUENCIES TO LICENSEE CONTROL (CAC NOS. MF7114 AND MF7115)

Dear Mr. Gebbie:

By letter dated November 19, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15328A469), as supplemented by letter dated February 4, 2016 (ADAMS Accession No. ML16039A240), Indiana Michigan Power Company (I&M, the licensee) submitted a license amendment request (LAR) for the Donald C. Cook Nuclear Plant (CNP), Units 1 and 2. The proposed changes are consistent with the NRC-approved Technical Specifications Task Force (TSTF) Traveler, TSTF-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control – [Risk Informed Technical Specifications Task Force] Initiative 5b." The proposed change would relocate surveillance frequencies to a licensee controlled program, the Surveillance Frequency Control Program.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the subject submittal, as supplemented, and has determined that additional information is needed to complete the review, as described in the enclosed request for additional information (RAI). The draft RAI was sent to I&M via electronic mail on April 21, 2016. The NRC staff clarified the draft RAI in a conference call conducted on May 3, 2016. A response to this RAI is expected by June 17, 2016.

Please feel free to contact me at (301) 415-2846 if you have any questions or concerns.

Sincerely,

Allison W. Dietrich, Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-315 and 50-316

Enclosure:
Request for Additional Information

cc: Distribution via ListServ

REQUEST FOR ADDITIONAL INFORMATION REGARDING

LICENSE AMENDMENT REQUEST TO

RELOCATE SURVEILLANCE FREQUENCIES TO LICENSEE CONTROL

DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-315 AND 50-316

CAC NOS. MF7114 AND MF7115

RAI-PRA-1

Pre-Initiators

Internal Event Probabilistic Risk Assessment (IEPRA) Facts & Observations (F&Os) associated with Supporting Requirements HR-A2, HR-A3, HR-B1, HR-B2, and HR-C2 find that pre-initiator events that could have an impact on the probabilistic risk assessment (PRA) were screened from the analysis. The dispositions to these F&Os explain that the impact of these findings will be addressed in accordance with Nuclear Energy Institute (NEI) 04-10, Section 4, Step 14. NEI 04-10 allows a sensitivity study to be performed to determine the significance of modeling uncertainty "by changing the unavailability terms for PRA basic events that correspond to Structure Systems and Components (SSCs) being evaluated." It is not clear how the sensitivity study would be applied given that pre-initiator events are Human Failure Events (HFEs) rather than SSC failure events. The factor of three approximation allowed in the sensitivity study for the variance case is based on the difference in reliability between the mean and 95th percentile for typical equipment reliability distributions. It is unknown how the Donald C. Cook Nuclear Plant (CNP), Units 1 and 2, plant-specific pre-initiator distributions compare to equipment distributions.

- Given that the failure distributions for pre-initiators could be much different from equipment distributions, explain how the sensitivity study allowed for SSCs by NEI 04-10 can be properly applied to Human Error Probabilities (HEPs) associated with pre-initiators or the equipment affected by the pre-initiators.

RAI-PRA-2

Human Reliability Analysis (HRA) Incompleteness

A number of F&O dispositions state that deviations from the supporting requirements (HR-D3, HR-G6, HR-I1, and HR-I2) were not important to the application. The F&O associated with HR-D3 finds that Performance Shaping Factors were not adequately addressed. The F&O associated with HR-G6 found the HRA consistency check insufficient. The F&Os associated with HR-I1 and HR-I2 found the HRA documentation inadequate to support PRA upgrades, PRA applications, and peer review. Considering the licensee's assessment of the F&Os and their disposition for this license amendment request (LAR), it does not appear that the licensee's

HRA was complete at the time of the peer review. Two options are available for addressing this issue.

a. Demonstrate quantitatively that the contribution to Core Damage Frequency (CDF)/Large Early Release Frequency (LERF) from HRA for those basic events potentially affected by the requested changes in surveillance test intervals (STIs) is negligible; or

b. Conduct a focused-scope peer review for the HR technical element based on the enhancements made since the 2015 peer review, and adequately disposition any remaining or new F&Os.

RAI-PRA-3

HRA Inadequacies to be Addressed with a Sensitivity Study

IEPRA F&Os associated with Supporting Requirements HR-E3 and HR-G5 found inadequacies in the HRA that could impact PRA results due to the lack of operator interviews to confirm interpretation of procedures, and the lack of a sufficient bases for the estimation of operator response times. The dispositions to these F&Os explain that the impact of these findings will be addressed in accordance with NEI 04-10, Section 4, Step 14. NEI 04-10 allows a sensitivity study to be performed to determine the significance of modeling uncertainty "by changing the unavailability terms for PRA basic events that correspond to SSCs being evaluated." It is not clear how the sensitivity study meant for SSCs would be applied, given that the findings are associated with input to the development of HEPs. The factor of three approximation allowed in the sensitivity study for the variance case is based on the difference in reliability between the mean and 95th percentile for typical equipment reliability distributions. It is unknown how CNP plant-specific failure distribution for HFEs compares to equipment distributions.

- Given that the failure distributions for HEPs could be much different from equipment distributions, explain how the sensitivity study allowed for SSCs by NEI 04-10 can be properly applied to HFEs or equipment affected by HFEs.

RAI-PRA-4

PRA Update Commitments

In the dispositions of the IEPRA, Internal Flooding PRA (IFPRA), and Fire PRA (FPRA) F&Os associated with Supporting Requirements SY-B10, HR-G4, DA-C15, IFSN-A16, IFSN-A17, IFEV-A8, IFQU-A3, LE-E1, PRM-B14, and PRM-B15, commitments were made to perform updates to the PRA in order to resolve the F&Os prior to implementation of the risk-informed surveillance frequency control program (SFCP). It appears that these PRA updates are needed to support future STI evaluations. For the F&O associated with SY-B10, the disposition states that a more detailed PRA model is needed prior to program implementation. For the F&O associated with HR-G4, the disposition indicates that the time available for operator actions will be updated based on current Modular Accident Analysis Program (MAAP) analyses and other information prior to program implementation. For the F&Os associated with IFSN-A16, IFSN-A17, IFEV-A8, and IFQU-A3, it appears that the committed updates are needed because

scenarios currently excluded will be incorporated into the PRA. For the F&O associated with DA-C15, the disposition states that credit for the cited repair will be removed. For the F&Os associated with LE-E1, PRM-B14, and PRM-B15, operator actions and bypass pathways will be reviewed and incorporated into the PRA as needed and LERF documentation will be completed for the Fire PRA prior to program implementation.

In addition to the commitments made in the F&O dispositions, Section 3 of the LAR states that as part of the STI evaluations, each supporting requirement will be re-examined, and those not resolved as meeting CC-II will be evaluated in a sensitivity study using guidance from NEI 04-10, Section 4, Step 14. This statement implies that PRA updates needed to resolve F&Os may not yet be implemented at the time an STI evaluation is performed.

a. Explain how the F&Os cited above, which have the potential to impact the application, have been resolved. Alternatively, explain why the F&Os are not important to this application.

b. Similar to the request made in RAI-PRA-1 and RAI-PRA-3, for F&Os that will be evaluated using the sensitivity study allowed by NEI 04-10, explain how the excluded and not-yet updated PRA modeling will be evaluated for the F&Os not directly associated with an SSC (i.e., MAAP runs that are not yet updated to establish the time available for operator actions, and unconfirmed door flood loading bases for the IFPRA).

RAI-PRA-5

Use of Surveillance Data

Based on the IEPRA F&O associated with Supporting Requirement DA-C10 and its disposition, it appears that surveillance tests may not have been reviewed for use in determining the demand count of plant-specific components. Considering that several component failure rates could be affected, it is not apparent how the licensee concluded that the resolution of this finding would have only a “minor or negligible” impact on the PRA.

- Explain how Supporting Requirement DA-C10 was met.

RAI-PRA-6

F&Os for LE Supporting Requirements Met at only CC-I with Inadequate Dispositions

A number of the dispositions to F&Os associated with LERF supporting requirements that meet CC-I provide minimal information without sufficient detail to determine the extent and validity of the disposition (F&Os for Supporting Requirements LE-C1, LE-C2, LE-C5, LE-C10, LE-C11, LE-C12, LE-C13, and LE-E2). The dispositions to each of these F&Os state “CC-I is considered to be sufficient to support applications for this [supporting requirement].” The F&O dispositions do not explain why the PRA modeling is sufficient to support the SFCP.

- Explain how the modeling associated with each of these supporting requirements is sufficient to support the SFCP, providing sufficient detail to support the explanation.

RAI-PRA-7

Overestimation of STIs because of Conservative Modeling

A number of dispositions to F&Os concerning LERF explain that the modeling relevant to a supporting requirement is conservative (i.e., LE-C2, LE-C5, LE-D1, LE-D2, and LE-D3). For many other supporting requirements, F&Os indicate that plant containment system functionality that could have been credited was not credited in the PRAs. Conservatisms in LERF related system modeling can lead to overestimation of STIs, particularly for STI evaluations performed for containment systems that were excluded from the modeling.

- Explain how conservative modeling of LERF will not lead to overestimation of certain STIs.

RAI-PRA-8

Modeling Basis for Reactor Coolant Pump (RCP) Seals

Enclosure 3, Section 6.1 of the LAR states that, "[t]he current PRA model utilizes the Pressurized Water Reactor Owners Group guidance (Reference 11) for PRA modeling of the shutdown seals, supported by the Westinghouse Owners Group 2000 RCP seal failure model (Reference 12), both of which are industry consensus models." Reference 11 is the PWROG-14001-P, PRA Model for the Generation III Westinghouse Shutdown Seal, Revision 1, July 2014. Reference 12 is WCAP-15603, WOG 2000 Reactor Coolant Pump Seal Leakage Model for Westinghouse Pressurized Water Reactors, Revision 1-A, June 2003. The RCP seal models in Reference 11 and Reference 12 are two different RCP seal models with major differences in the probability and magnitude of seal failure.

a. Which RCP seals are currently installed at CNP?

b. Which RCP seal model is in the current PRA, the model in Reference 11 or the model in Reference 12?

c. The model in Reference 12 has been accepted by the staff, but the model in Reference 11 is still under review. The model in Reference 11 should not be used to support changes to surveillance intervals until an accepted version is available. Clarify how the RCP seal model will be used in surveillance interval-related calculations until an accepted version of Reference 11 is available.

RAI-PRA-9 - Deleted

RAI-PRA-10

Peer Review of IEPRA and IFPRA

Section 3 of the LAR states that a peer review of the IEPRA and IFPRA was conducted in July 2015 against ASME RA-Sa-2009 and RG 1.200, Rev. 2, and that this peer review supersedes previous peer reviews. The LAR does not describe this peer review or provide

justification for concluding that all previous peer reviews are superseded, including previously open F&Os.

a. Explain how the peer review meets the requirements of Section 1-6 of the PRA Standard ASME RA-Sa-2009, and Section 2.2 of RG 1.200, Rev. 2, including NRC staff clarifications and qualifications.

b. Describe the scope of the peer review and explain why it is considered to supersede all previous peer reviews.

RAI-PRA-11

External Hazards

Enclosure 3, Section 4.2 of the LAR does not explain how the risk from external hazards evaluated in the CNP Individual Plant Examination of External Events is updated to reflect new information when used in performing a qualitative or bounding analysis in support of STI extension evaluations in accordance with NEI 04-10, Section 4, Step 10.

- Discuss the process for incorporating new information into these qualitative or bounding analyses, and explain how this process is sufficient to support the SFCP and the as-built as-operated plant configuration. Specifically address high winds, including updated tornado and hurricane climatology, external flooding, and seismic events, including updated site-specific ground motion response spectra.

Please feel free to contact me at (301) 415-2846 if you have any questions or concerns.

Sincerely,

/RA/

Allison W. Dietrich, Project Manager
Plant Licensing Branch III-1
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